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METHOD FOR RECORDING INFORMATION FOR DISTRIBUTION TRIALS FOR COMPLETE, FILLED TRANSPORT PACKAGES

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METHOD FOR RECORDING INFORMATION FOR DISTRIBUTION TRIALS FOR COMPLETE, FILLED TRANSPORT PACKAGES

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Indian Standard

METHOD FOR RECORDING INFORMATION FOR DISTRIBUTION TRIALS FOR COMPLETE, FILLED TRANSPORT PACKAGES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 January 1981, after the draft finalized by the Transport Packages Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 The relationship between hazards encountered by complete, filled transport packages in a distribution system and the resulting damage that may be sustained by the packages, or their contents, or both of them is important in the development of new test methods, in refining existing test methods, and in the preparation of appropriate test schedules.

0.3 The study of such relationship is facilitated if, when carrying out distribution trials involving complete, filled transport packages, adequate information is recorded on a uniform basis. This enables proper comparison to be made of data obtained at different times and under various circumstances.

0.4 The purpose of this standard is to aid such comparisons by specifying the information to be recorded. Its contents are likely to be of interest to all concerned with the trials under various circumstances.

0.5 In order to facilitate international coordination on the subject this standard is based on Draft International Standard ISO/DIS 4178 Complete, filled transport packages—Distribution trials—Information to be recorded.

1. SCOPE

1.1 This standard specifies the information to be recorded when carrying out distribution trials involving complete, filled transport packages.

1.2 It is applicable to distribution systems in which the hazards of stacking, vertical impact, horizontal impact, and vibration are encountered or are likely to be encountered.

2. INFORMATION TO BE RECORDED

2.0 The following information shall be recorded in the order given. Where possible, results shall be set out in the form of a table.

2.1 Description of Trial

2.1.1 A brief description of the trial shall be given, including:

a) The purpose of trial;

b) A brief description of the packages used;

c) The starting point and the destination of the package(s), if a journey was involved;

d) A description of the operations carried out on the package(s), and the order in which they were carried out;

e) The time interval between the various operations carried out on the packages;

f) The duration of each of the various operations carried out on packages; and

g) The modes of transport, if any involved at each stage of trial.

2.2 Results of Trial

2.2.1 The results of the trial shall be given and may be quoted in terms of the reduction in quality of the packages and/or its contents, by the extent of loss of package contents, by the extent of damage to the package and/or its contents, or in terms of measurements made on the package and/or the contents. Preferably, the results shall be in such terms that changes in the factors under investigation in the trial can be correctly assigned to the operations and hazards in the distribution system that produce them.

2.3 Package

2.3.1 A description of each package shall be given, including:

a) Mass, in kilograms;

b) Dimensions (actual), in millimetres;

c) The nature of the packaging, including fittings and method of sealing;

d) The contents;

e) The marking of the package; and

f) The handling aids attached or available for use.

2.4 Hazards in Trial

2.4.1 Climatic conditions at each operation or hazard in the trial shall be recorded, preferably by means of a continuous recorder.

2.4.2 Where necessary, operations involving the same hazard shall be recorded separately.

2.4.3 Information shall be recorded for each type of hazard as given in **2.4.3.1** to **2.4.3.4**.

2.4.3.1 *Stacking* — The following information shall be recorded for each stage in the trial at which packages were stacked:

a) The number of packages stacked;

b) The number of packages on which no load was superimposed;

c) The attitude of each package;

d) The height of the stack and, if the packages in the stack were assorted, the average density of the stack;

e) The nature of the upper and lower loading surfaces;

f) The duration of loading of packages, preferably in the form of a cumulative frequency curve;

g) The stacking pattern, if the packages in the stack were identical; and

h) How measurements were carried out.

2.4.3.2 *Vertical impact* — The following information shall be recorded for each stage in the trial at which packages sustained vertical impact:

a) The number of packages observed or measured;

b) The number of packages which sustained no drop;

c) The attitude of the packages;

d) The drop heights, preferably in the form of a cumulative frequency distribution of drop height but, if this is not possible, the 5·50 and 95 percentile points shall be recorded whenever possible;

e) The number of drops;

f) The nature of the impact surfaces;

g) How measurements were carried out;

h) The time intervals between drops, if more than one drop per package was involved.

Where applicable the following information shall also be recorded:

j) The vehicle or craft involved;

k) The degree or loading of the vehicle;

m) The positions in the vehicle at which measurements were made; and

n) The route and type of terrain (or sea or air conditions).

2.4.3.3 *Horizontal impact* — The following information shall be recorded for each stage in the trial at which packages sustained horizontal impact:

a) The number of packages observed or measured;

b) The number of packages which sustained no impact;

c) The attitude of the packages;

d) The form of the cumulative frequency distribution for velocity of impact, but if this is not possible, the 5·50 and 95 percentile points shall be recorded for 1 to n impacts on an individual package;

e) The number of impacts;

f) The nature of the impact surfaces;

g) How measurements were carried out;

h) The time interval between impacts, if the trial comprises several operations involving horizontal impact;

Where applicable, the following information shall also be recorded:

j) The vehicle or craft involved;

k) The degree of loading of the vehicle;

m) The positions in the vehicle at which measurements were made;

n) The route and type of terrain (or sea or air conditions).

2.4.3.4 *Vibration* — The following information shall be recorded for each stage in the trial at which packages were vibrated:

a) The number of packages on which measurements were made;

b) The attitude of the packages;

c) The vibration frequency and amplitude. If there was more than one vibration frequency or amplitude, the distribution curve shall be given;

d) The duration of vibration;

e) The magnitude of the superimposed load, if any, in kilograms;

f) How measurements were carried out and the records analysed.

Where applicable, the following information shall also be recorded:

g) The vehicle or craft involved;

h) The degree of loading of the vehicle;

j) The positions in the vehicle at which measurements were made; and

k) The route and type of terrain (or sea or air conditions).

2.5 General Information

2.5.1 The following general information shall also be recorded:

a) Organization(s) and individuals concerned in the trial and in the analysis of the results; and

b) Any other relevant information.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Definition*
Force	newton	N	1 N=1kg. m/s^2
Energy	joule	J	1 J=1 N.m
Power	watt	W	1 W=1 J/s
Flux	weber	Wb	1 Wb=1 V.s
Flux density	tesla	T	1 T=1 Wb/m^2
Frequency	hertz	Hz	1 Hz=1 c/s (s^{-1})
Electric conductance	siemens	S	1 S=1 A/V
Electromotive force	volt	V	1 V=1 W/A
Pressure, stress	pascal	Pa	1 Pa=1 N/m^2